

Amend the claims as follows:

154.4 (Amended Once) A therapeutic method for controlling thrombosis and decreasing blood hypercoagulation and hemorrhaging risks in a patient which comprises administering to the patient in an antithrombotic effective amount, a composition which comprises a therapeutically acceptable carrier and heparinic mucopolysaccharide fractions having constituents of a molecular weight not in excess of about 10,000 daltons, which fractions have (1) a mixture of lower molecular weight fractions in the range of about 2,000 to about 4,000 daltons with higher molecular weight fractions of a molecular weight in the range of about 4,000 to about 10,000 daltons, (2) a Yin-Wessler of at least 40, and (3) a ratio of Yin-Wessler to USP titer in the range of 3 to 5, and the physiologically acceptable salts thereof, which mixture of fractions have improved antithrombotic activity in vivo which is higher than that of heparin and a whole anticoagulation activity lower than that of heparin, and said method controlling thrombosis by selectively inhibiting coagulation factor Xa while also having a whole anticoagulation effect which is slower and lower than that of heparin.

Claim 5-10  
161. (Amended Once) A therapeutic composition for controlling thrombosis and decreasing hemorrhaging and of blood hypercoagulation risks which comprises a therapeutically

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acceptable carrier and heparinic mucopolysaccharide fractions having constituents of a molecular weight not in excess of about 10,000 daltons, which fractions have (1) a mixture of lower molecular weight fractions in the range of about 2,000 to about 4,000 daltons with higher molecular weight fractions of a molecular weight in the range of about 4,000 to about 10,000 daltons, (2) a Yin-Wessler of at least 40, and (3) a ratio of Yin-Wessler to USP titer in the range of 3 to 5, and the physiologically acceptable salts thereof, which mixture of fractions have improved antithrombotic activity in vivo which is higher than that of heparin and a whole anticoagulation activity lower and slower than that of heparin.

~~claims 12-17~~  
Add the following claims:

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~~168~~ 169. Heparinic mucopolysaccharide fractions having constituents of a molecular weight not in excess of about 10,000 daltons, which fractions have (1) a mixture of lower molecular weight fractions in the range of about 2,000 to about 4,000 daltons with higher molecular weight fractions of a molecular weight in the range of about 4,000 to about 10,000 daltons, (2) a Yin-Wessler of at least 40, and (3) a ratio of Yin-Wessler to USP titer in the range of 3 to 5, which mixture of fractions have improved antithrombotic activity in vivo which is higher than that of heparin and a whole anticoagulation activity lower than that of heparin, and the physiologically acceptable salts thereof.

~~claim 19~~  
4-37

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170. The heparinic mucopolysaccharides of claim <sup>168-18</sup> 169 in which the lower molecular fractions have a USP titer less than about 10 units per mg.  
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171. The heparinic mucopolysaccharides of claim <sup>168-18</sup> 169 wherein the molecular weight is not in excess of about 8,000 daltons.  
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172. The heparinic mucopolysaccharides of claim <sup>168-18</sup> 169 which have a USP titer of about 45 units per mg, a Yin-Wessler titer of about 160 units/mg and a ratio of Yin-Wessler to USP titer of about 3.55.  
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173. The heparinic mucopolysaccharides of claim <sup>168-18</sup> 169 in which fractions below 4,000 have a ratio of Yin-Wessler to USP titer which is at least 10.  
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174. The heparinic mucopolysaccharides of claim <sup>168-18</sup> 169 in which fractions of about 4,000 have a ratio of Yin-Wessler to USP titer higher than 11, and the Yin-Wessler is at least 900 units per mg.  
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175. The heparinic mucopolysaccharides of claim <sup>168-18</sup> 169 in which fractions have a Yin-Wessler to USP titer ratio higher than 60 and a Yin-Wessler of at least 1,300 units per mg.  
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<sup>26</sup>  
~~176.~~ The heparinic mucopolysaccharides of claim <sup>168</sup>~~169~~<sup>18</sup>  
wherein fractions above 4,000 have a USP titer not exceeding  
about 15 units per mg and a Yin-Wessler titer in the range of  
about 99 to about 160 units per mg.

<sup>27</sup>  
~~177.~~ The heparinic mucopolysaccharides of claim <sup>26</sup>~~176~~  
wherein the fractions have a ratio of a Yin-Wessler to USP  
titer is in the range of about 13 to about 16.

<sup>28</sup>  
~~178.~~ The heparinic mucopolysaccharides of claim <sup>18</sup>~~168~~<sup>169</sup>  
wherein fractions have a USP titer that does not exceed about 6  
units per mg, a Yin-Wessler titer not less than about 44 units  
per mg and the ratio of Yin-Wessler to USP titers if about at  
least 9.

<sup>29</sup>  
~~179.~~ The heparinic mucopolysaccharides of claim <sup>18</sup>~~168~~<sup>169</sup>  
having low molecular weight fractions with specific affinity  
for antithrombin III.

<sup>30</sup>  
~~180.~~ The heparinic mucopolysaccharides of claim <sup>18</sup>~~168~~<sup>169</sup>  
in which fractions have 8 to 12 monosaccharide units corresponding  
to a molecular weight ranging from about 2,500 to 3,800.

<sup>31</sup>  
~~181.~~ The heparinic mucopolysaccharides of claim <sup>18</sup>~~168~~<sup>169</sup>  
wherein fractions have a molecular weight range of about 2,000  
to about 8,000.

<sup>32</sup>  
~~182~~<sup>19</sup>. The heparinic mucopolysaccharide fractions of claim ~~169~~<sup>19</sup> which are soluble in an aqueous-alcoholic medium, and insoluble in pure alcohol.

<sup>33</sup>  
~~183~~<sup>33</sup>. A therapeutic composition which presents less risks than heparin of blood hypercoagulation and of a host hemorrhaging, which composition has improved antithrombotic activity (anti-X<sub>a</sub> activity) and improved selectivity with respect to anti-X<sub>a</sub> activity than heparin in vivo and a lower and slower anticoagulation activity than heparin, and which composition comprises a therapeutically acceptable carrier and an antithrombotic effective amount of heparinic mucopoly-saccharide fractions having constituents of a molecular weight not in excess of about 10,000 daltons, which fractions have (1) a mixture of lower molecular weight fractions in the range of about 2,000 to about 4,000 daltons with higher molecular weight fractions of a molecular weight in the range of about 4,000 to about 10,000 daltons, (2) a Yin-Wessler of at least 40, and (3) a ratio of Yin-Wessler to USP titer in the range of 3 to 5, which mixture of fractions have improved antithrombotic activity in vivo which is higher than that of heparin and a whole anticoagulation activity lower than that of heparin, and the physiologically acceptable salts thereof.

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184. The therapeutic composition of claim ~~183~~<sup>33</sup> in which the lower molecular fractions of the heparinic mucopolysaccharides have a USP titer less than about 10 units per mg.  
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185. The therapeutic composition of claim ~~183~~<sup>33</sup> in which the molecular weight of the heparinic mucopolysaccharides is not in excess of about 8,000 daltons.  
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186. The therapeutic composition of claim ~~183~~<sup>33</sup> in which the heparinic mucopolysaccharides have a USP titer of about 45 units per mg, a Yin-Wessler titer of about 160 units/mg and a ratio of Yin-Wessler to USP titer of about 3.55.  
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187. The therapeutic composition of claim ~~183~~<sup>33</sup> in which fractions of the heparinic mucopolysaccharides below 4,000 have a ratio of Yin-Wessler to USP titer which is at least 10.  
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188. The therapeutic composition of claim ~~183~~<sup>33</sup> in which heparinic mucopolysaccharides have fractions of about 4,000 which have a ratio of Yin-Wessler to USP titer higher than 11, and the Yin-Wessler is at least 900 units per mg.  
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189. The therapeutic composition of claim ~~183~~<sup>33</sup> in which fractions of the heparinic mucopolysaccharides have a Yin-Wessler to USP titer ratio higher than 60 and a Yin-Wessler of at least 1,300 units per mg.  
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190. The therapeutic composition of claim ~~183~~<sup>33</sup> wherein fractions of the heparinic mucopolysaccharides above 4,000 have a USP titer not exceeding about 15 units per mg and a Yin-Wessler titer in the range of about 99 to about 160 units per mg.

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191. The therapeutic composition of claim ~~190~~<sup>40</sup> wherein the fractions of the heparinic mucopolysaccharides have a ratio of a Yin-Wessler to USP titer is in the range of about 13 to about 16.

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192. The therapeutic composition of claim ~~183~~<sup>33</sup> wherein fractions of the heparinic mucopolysaccharides have a USP titer that does not exceed about 6 units per mg, a Yin-Wessler titer not less than about 44 units per mg and the ratio of Yin-Wessler to USP titers if about at least 9.

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193. The therapeutic composition of claim ~~183~~<sup>33</sup> wherein the heparinic mucopolysaccharides have low molecular weight fractions with specific affinity for antithrombin III.

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194. The therapeutic composition of claim ~~187~~<sup>37</sup> wherein fractions of the heparinic mucopolysaccharides have 8 to 12 monosaccharide units corresponding to a molecular weight ranging from about 2,500 to 3,800.